Implementation Plan Outline
Subobjective 4.3.5 – Gulf of Mexico

Goal 4: Healthy Communities, and Ecosystems. Protect, sustain or restore the health of people, communities, and ecosystems using integrated and comprehensive approaches and partnerships.	**Objective 3: Ecosystems.** Protect, sustain, and restore the health of natural habitats and ecosystems.	**Subobjective 4.3.5: Gulf of Mexico. Score for overall aquatic system health of coastal waters of the Gulf of Mexico on the "good/fair/poor" scale of the National Coastal Condition Report. (5 point scale)**
Strategic Target IV-N : Prevent water pollution and protect aquatic species in order to improve the health of the Gulf of Mexico.		

1. PAMS

2002 Baseline	**1.9 (fair/poor where 1 is poor, 5 is good)**	
2005 Target	2.0 (fair/poor where 1 is poor, 5 is good)	
2006 Target	2.4 (fair/poor where 1 is poor, 5 is good)	
2008 Target	**2.5(fair/poor where 1 is poor, 5 is good)**	
Program Activities	**-FY05-**	**FY06**
	Provide strategically focused assistance to 20% (i.e., 71) of the impaired segments in the 13 priority coastal areas where water and habitat quality is restored to levels that meet state water quality standards by 2009. (**Base: 354 segments – 1998 303(d))**	Percentage of the impaired segments in the 13 priority coastal areas where water and habitat quality is restored to levels that meet state water quality standards. **(Base: 354 segments – 1998 303(d))**
	Increase by 2400 the number of additional acres important coastal and marine habitats that are restored, enhanced, or protected, above improvements accomplished through 2004. (**USGS 2000 baseline for all Gulf of Mexico coastal wetland habitats – 3,769,370 acres)**	Increase by 2400 the number of additional acres important coastal and marine habitats that are restored, enhanced, or protected, above improvements accomplished through 2004. (**USGS 2000 baseline for all Gulf of Mexico coastal wetland habitats – 3,769,370 acres)**
	Implement integrated binational (U.S. and Mexican Border States) early-warning system to support State and coastal community efforts to manage harmful algal blooms (HABs).	Implement integrated binational (U.S. and Mexican Border States) early-warning system to support State and coastal community efforts to manage harmful algal blooms (HABs).
	Reduce the rate of shellfish-borne Vibrio vulnificus illnesses caused by consumption of commercially-harvested raw or undercooked oysters from the average illness rate for the years 1995-1999. **(Average rate = .303/million**	Reduce the rate of shellfish-borne Vibrio vulnificus illnesses caused by consumption of commercially-harvested raw or undercooked oysters from the average illness rate for the years 1995-1999. **(Average rate = .303/million)**

Establish a Lower Mississippi River Sub-Basin Committee (as called for in the Hypoxia Action Plan), select a project watershed in each of the states in the Lower MS River Basin, and implement actions in selected watershed within the Lower Mississippi River Basin to reduce nitrogen loadings to the Mississippi River.	Support a Lower Mississippi River Sub-Basin Committee (as called for in the Hypoxia Action Plan), select a project watershed in each of the states in the Lower MS River Basin, and implement actions in selected watershed within the Lower Mississippi River Basin to reduce nitrogen loadings to the Mississippi River and develop strategies for nutrient reduction.

1. How are activities linked directly or indirectly to Strategic target /subobjective?

Strategic Target: Prevent water pollution and protect aquatic species in order to improve the health of the Gulf of Mexico.

IV-GM-1: Percentage of impaired segments in the 13 priority coastal areas where water and habitat quality is restored to levels that meet state water quality standards. (Base 354 segments)

Approximately 480 water segments (51% of reported impaired segments) along the Gulf Coast are impaired due to the presence of fecal coliform bacteria, the primary indicator of microbial pathogens. This contamination is causing waters to not meet designated uses, such as swimming, wading, boating, or shellfish harvest. Over 50% of Gulf State shellfish growing waters are under either periodic or permanent harvest restrictions due to poor water quality and/or proximity to pollution sources. Also, over 80% of the estuaries in the Gulf have low levels of dissolved oxygen during at least part of the year. The Gulf of Mexico Program does not have the resources to address needs in all of the Gulf coastal watersheds, so the States identified 13 priority coastal areas to receive targeted technical and financial assistance for projects that restore impaired water quality. There are 354 segments within the 12 priority areas that are not meeting State water quality standards. To achieve the objective of restoring water quality in 20% of the impaired segments, the Gulf Program will work with the Gulf States in conjunction with their five-year basin rotation water management programs. This will allow GMP to provide assistance in each phase of the State's management program - assessment, monitoring, modeling, total maximum daily load (TMDL) development, and pollution control implementation. An interim measure is to ensure that watershed restoration actions are being implemented to restore beneficial uses in at least 71 impaired coastal segments by 2004, so that environmental results in terms of improved water quality will be measured in the 2005 – 2009 timeframe.

The key environmental indicators tracked to measure progress of this program activity toward meeting the strategic target :

- Number and percent of impaired, assessed river miles and estuary square miles that are restored to their designated uses during the reporting cycle under section 303(d) and 305(b) of the Clean Water Act.

- Total number of reported cases of non-Vibrio illness on an annual basis associated with pathogens from pollution sources, as compiled and reported by the Food and Drug Administration (FDA), the Center for Disease Control (CDC), and the Gulf State Epidemiologist annual illness reports;

- Trends in shellfish growing water quality based on State Shellfish Sanitation surveys;

- The number of beach closures implemented by the Gulf States on an annual basis due to high levels of microbial pathogens;

- The number, type, and location of fish consumption advisories issued by the Gulf States on an annual basis;

- Mercury contaminant levels over time in fish fillets for important commercial and recreational marine and estuarine species;

- The number and percent of impaired, assessed river miles and estuary square miles that are covered under a watershed restoration strategy, including a TMDL and TMDL implementation plan, or under a comprehensive conservation and management plan (CCMP).

IV-GM-2: Number of additional acres of important coastal and marine habitats that are restored, enhanced, or protected above improvements accomplished through 2003. (USGS 2000 baseline for all Gulf of Mexico coastal wetland habitats – 3,769,370 acres)

Some of the most important habitat losses are occurring in the coastal watersheds and near coastal

waters where development pressures and recreational and commercial uses of the near shore waters are high. Some of the estuaries in the northern Gulf have lost from 20 to 100 percent over the last 50 years. Total wetland loss (coastal and inland) for the five Gulf states from 1780 to 1980 is estimated to be 24.8 million square miles or 50%.

The key environmental indicators tracked to measure progress of this program activity toward meeting the strategic target :

- Number of acres of important marine and coastal habitat that is restored, protected, or enhanced as a result of projects and partnerships supported by the Gulf Program;

- An estimate of the total number of acres restored or protected on an annual basis through regulatory and nonregulatory actions by public and private organizations in the Gulf coastal areas;

- Number of Gulf States developing aquatic invasive species management plans for the Gulf coastal areas;

IV-GM-3: Implement integrated binational (U.S. and Mexican Border States) early-warning system to support State and coastal community efforts to manage harmful algal blooms (HABs).

Of the toxic microalgae, about half are found in the Gulf of Mexico. In the past, Karenia brevis blooms (red tide) were confined to Florida, Texas, and Mexico. In 1996, the first recorded red tide event affected the coastal waters of all five Gulf states. The event caused large-scale mortalities of fishes and invertebrates, and significant mortalities in the endangered Florida manatee. The toxic by-products contaminated shellfish and aerosols caused respiratory problems, eye irritation, and allergic reactions for beach-goers. The Gulf of Mexico Program is supporting the integrated development and implementation of a binational early-warning system.

The key environmental indicators tracked to measure progress of this program activity toward meeting the strategic target :

- Establishing a network of coastal laboratories to provide data and to form the data communications and management infrastructure for harmful algal blooms;

- Demonstrate the ability to integrate, interpret and present essential data from across the Gulf region in a manner useful to State resource and public health managers;

- Demonstrate the capacity to forecast *K.brevis* events and effects within a time frame useful to State resource and public health managers.

IV-GM-4: Reduce the rate of shellfish-borne Vibrio vulnificus illnesses caused by consumption of commercially-harvested raw or undercooked oysters from the average illness rate for the years 1995-1999. (Average rate = .303/million)

Vibrio vulnificus is a naturally occurring bacterium found in all coastal waters. It is not the result of pollution and can be found in waters approved for shellfish harvesting. It is more abundant in oysters and clams during the warm weather months of April through October. Certain health conditions can increase an individual's vulnerability to the illness. Between 1989 and 1998, the CDC reported 204 serious illnesses from Vibrio resulting in 105 deaths. The majority of Vibrio illnesses reported have been tracked to oysters originating in Gulf waters, but proper cooking wil destroy the bacteria and eliminate the risk of infection.

The key environmental indicators tracked to measure progress of this program activity toward meeting the strategic target :

- Total number of reported cases of *Vibrio vulnificus* illness on an annual basis as compiled by the FDA and CDC from the Gulf State Epidemiologist annual illness reports.

- Increase in awareness of high risk consumers of the danger of eating raw or undercooked oysters.

- Number of educational packages distributed and educational workshops held;

- Number of projects implemented to identify technically and economically viable post-harvest treatment practices and technologies;

IV-GM-5: Establish a Lower Mississippi River Sub-Basin Committee (as called for in the

Hypoxia Action Plan), select a project watershed in each of the states in the Lower MS River Basin, and implement actions in selected watersheds within the Lower Mississippi River Basin to reduce nitrogen loadings to the Mississippi River.

The largest area of hypoxia in U.S. waters that is associated with human activities occurs in the northern Gulf of Mexico on the Texas-Louisiana inner continental shelf. Scientific investigations over the last several decades indicate overwhelmingly that oxygen stress in the northern Gulf of Mexico is caused primarily by excess nutrients delivered to Gulf waters from the Mississippi-Atchafalaya River drainage basin in combination with the stratification of Gulf waters. Physical changes in the basin, such as channelization and loss of natural wetlands and riparian buffers as well as wetland conversions throughout the basin and water quality degradation from nonpoint sources are the principal reasons for excessive nutrients being delivered to the Gulf. Annually recurring incidences of hypoxia in a consistent location may result in habitat losses and overall declines in biological production. Physical changes to the Mississippi River Basin, particularly the lower river, are not only contributing to Gulf hypoxia, but the leveeing of the river from its natural floodplain is one of the primary factors causing coastal land loss in Louisiana. Hypoxia and Louisiana coastal land loss are closely linked.

The key environmental indicators tracked to measure progress of this program activity toward meeting the strategic target :

- The annual survey of the areal extent of the Gulf hypoxic zone.
- Annual nitrate load discharged fro the Mississippi River to the Gulf as reported by USGS.
- Annual nitrate load discharged to the Mississippi-Atchafalaya River by major tributaries in Louisiana and Mississippi;
- Nitrate load diverted from the Mississippi River by major water diversion projects implemented under the Coast 2050 Plan;
- Number of acres of restored coastal wetlands resulting from River diversions.

3. Data issues/improvements

There is a need for the consolidation, coordination, and networking of data across the Gulf through all agencies collecting and managing data to form an infrastructure to provide a resource to decision makers at all levels: state, local, and federal governments.

4. Intersection with other EPA programs

TMDLs: Support for the development of TMDL implementation plans and support for the implementation of these plans in the Gulf priority areas and in all impaired segments along the Gulf is essential to the accomplishment of this subobjective.

Monitoring: To assess the overall aquatic system health of coastal waters of the Gulf of Mexico, adequate monitoring by ORD in cooperation with OW, Regional offices, the Gulf States and other agencies is necessary.

Nonpoint source: 319 funding in the GMP priority areas can be targeted toward restoration actions and watershed plans so that impaired segments can be removed from the 303(d) lists.

Wetlands: Partnerships with other EPA programs such as the Five Star Program help leverage funding toward restoring, protecting, enhancing important coastal and marine habitats and preventing further wetland loss.

WQ Standards: The predominant constituents in Gulf coastal waters causing water quality impairments are microbial pathogens, nutrients, and mercury based on the 1998 303(d) lists. The Gulf Program is providing technical and financial assistance for projects that restore impaired water quality to meet State water quality standards.

Air Office: Air-Water interface is an important component in addressing the integration of core programs with ocean and coastal programs and in characterizing sources of problems related to the overall health of the coastal waters of the Gulf of Mexico.

OECA: Activities must be targeted where permit violations are occurring and are contributing to the impairments in Gulf of Mexico segments.

ORD: EPA's National Coastal Assessment is a multi-year partnership among EPA's ORD, Office of Water, Regional Offices, NOAA, USGS, all coastal states, and selected territories. As part of this effort, ORD, through the Gulf Ecology Division, has developed a coastal monitoring program

for the Gulf of Mexico in cooperation with the five Gulf States. This joint effort will determine the ecological condition of estuarine waters in each of the Gulf States and will permit comparison to other U.S. coastal areas. Each state uses a compatible probabilistic design and a common set of environmental indicators to survey its coastal resources and assess their condition. These estimates are then aggregated to assess conditions at various scales of geographic resolution, including Gulf-wide. Also, the Gulf Program has developed a research needs assessment in coordination with ORD which will serve as the basis for future GMP policy and recommendations and for federal and state agencies to use to redirect existing research initiatives where needed.

5. HQ/Regional Guidance

EPA Strategic Plan 2004-2008, Region 4 Strategic Plan, Region 6 Strategic Plan

6. Engage with other Federal programs

USDA, ACOE, NOAA, FWS, USGS, USN, USAF, FDA, NASA are members of our Management Committee and as such these Federal partners take the lead in seeing that the Program's needs for ecological assessments, additional research, development of appropriate measures and baselines, and project implementations are addressed.

7. Partnerships

Key to the continued progress of the Gulf of Mexico Program is the voluntary, stakeholder-driven, multi-agency approach. The Gulf Program is designed to assist states and stakeholders in developing a regional, ecosystem-based framework for restoring and protecting the Gulf. The Program is developing a framework through coordinated monitoring and modeling efforts with the Gulf States and other federal agencies and through Gulf-wide assessments of the status and trends of key resources. At the same time, the Program has developed a framework for action at the local level by targeting 12 priority coastal areas for technical and financial assistance to help communities address critical needs at the watershed level.

8. Innovative elements

The Gulf of Mexico Program is a voluntary partnership of government agencies and private institutions and organizations, some of which have regulatory and enforcement responsibilities. The procedures for developing and implementing regulations are well established; however, the Program's direction is to work across the partnership to provide participating organizations and

communities with the necessary information, technical assistance and/or resource capacity to solve the problems themselves through voluntary actions. Though the Program's actions are anticipated to be innovative and often unique, they will be limited to the legal authorities and policies of the individual partner organizations.

9. Watershed-specific plans

All five Gulf States either have or are adopting a basin planning and implementation framework for addressing water quality and other natural resource issues. The Gulf Program wants to reinforce this effort, where possible, and align the Program's goals and expectations for results with the priority places and time schedules developed by the States.
In addition, the Gulf Program works to coordinate with local watershed planning groups and local governments that are covered under a watershed restoration strategy including TMDL implementation plans. Seven of the 12 priority areas selected by the Gulf Program are National Estuary Programs and are covered under a comprehensive conservation and management plan (CCMP).

10. Funding

NEP: Seven of the Gulf of Mexico Program's 12 priority areas include National Estuary Programs. The Gulf Program will continue to support protection and restoration efforts in these high-priority ecosystems through technical and financial assistance to enable the NEPs to implement their CCMPs.

Watershed Initiative: Targeted watershed initiatives are an important component of community-based environmental protection and restoration. Continued implementation of core water programs and efforts to address the hypoxic zone will help to restore the waters of the Gulf of Mexico and its tributaries.

Regional Geographic Initiative: Coordinate Region 4 and Region 6 funding with watershed action plans in strategically chosen areas or for Gulf-wide initiatives which can be transferred into multiple watersheds, i.e., Bacterial Source Tracking research.

HQ and Regional 104(b)(3) funds: Gulf of Mexico stakeholders can compete for funding for

projects in priority areas or for Gulf-wide research, studies, surveys, or demonstration projects.

CWSRF funding: The CWSRF program funds projects for publicly-owned wastewater treatment facilities. States and local communities can direct SRF funding into impaired areas for sewage infrastructure. CWSRF funds can also be directed toward nonpoint source and estuary management projects to control pollution and address agricultural runoff, leaking on-site septic systems, and urban nonpoint source pollution including stormwater runoff and brownfield contamination all of which may be part of a watershed restoration plan.

319 funding: Section 319 incremental funds should be used to restore impaired waters and can be used for the development and implementation of watershed-based plans and TMDLs for impaired waters in coordination with Gulf of Mexico Program funding in priority areas. Base 319 funds can be used to implement projects to identify and address nonpoint source problems and threats, as well as funding activities that involve specific waterbodies in that a state or regional projects. Some of these funds can also be used for watershed planning and assessments, developing TMDLs, and creating programs to solve nonpoint source problems.

USDA: Environmental Quality Incentives Program (EQIP) funding through NRCS provides technical, educational, and financial assistance for natural resource conservation in an environmentally beneficial and cost-effective manner. The Gulf of Mexico Program is attending and participating in the NRCS State Technical meetings in all five Gulf states in order to coordinate funding toward projects in the Gulf of Mexico priority areas.

Other: Partnerships and coordinated funding with EPA's Five Star Restoration Program and NOAA's Coastal Community Restoration Program help us to reach our habitat restoration acreage. Non-government partnerships which will assist the Gulf Program in meeting our strategic targets are the Nature Conservancy, the Harte Institute, Gulf of Mexico Foundation, Texas Institute for Applied Environmental Research, the Lower Mississippi Valley Initiative, and the Mississippi River Basin Alliance.

11.Other issues/concerns:

A. Absence of Integration of the Strategic Planning activities across offices and programs. Currently, most, if not all of the implementation plans for the Programs and Regions are being developed independently of one another. This will all but certainly result in ineffective leveraging of EPA's limited technical and financial resources that can be brought to bear on this strategic

subobjective. Addressing the absence of integration this late in the strategic planning process will be difficult, yet essential.

B. Leveraging Partnership Resources. To carry out this implementation plan , the partnership must undertake aggressive and innovative strategies to improve the delivery of financial and technical resources to the Gulf States and communities to design, implement, monitor, and evaluate projects that attain measurable environmental results. The Gulf Program will target specific federal, State, local, and private programs, processes, and financial authorities in order to leverage the resources needed to support State and community actions and to accomplish these environmental measures.